

New Claims 172-175 all depend from Claim 171, which in turn depends from Claim 61. Each of Claims 172-175 narrows the scope of what is recited in Claim 171 by specifying one of the particular herbicides listed in the alternative in Claim 61.

New Claims 176-179 all depend from Claim 61, and each narrows the scope of what is recited in independent Claim 61 by specifying one of the particular herbicides listed in the alternative in Claim 61.

New Claims 180-185 are substantially identical to one or more of Claims 38, 54, and 61, except that the class of herbicide used in the recited methods is defined generically rather than by reference to particular compounds or their derivatives. Support for these limitations may be found, for example, in the specification at page 1, lines 15-17; page 6, lines 21-34; page 13, lines 29-30; page 29, line 33 through page 30, line 8; page 30, line 22 through page 31, line 23; and Claims 63, 65, 67, 76, 78, and 80 as originally filed.

Applicant notes an apparent typographical error in the Office's identification of the pending Claims on the PTO-326 cover sheet accompanying the December 3, 2002 Restriction Requirement, and in Paragraph 4 (page 2) of the detailed action: namely, Claim 15 was omitted from the Claims said to be pending, while Claim 30 was listed as being pending. In fact, Claim 15 is pending, while Claim 30 had previously been cancelled. The discussion in Paragraph 5 of the December 3, 2002 Restriction Requirement mentions Claim 15 numerous times, while never mentioning Claim 30 -- leading the undersigned to believe that the errors noted on the PTO-326 and Paragraph 4 of the December 3, 2002 most likely resulted from a clerical error.

To avoid possible misunderstanding, in the next communication concerning this application, the Office is respectfully requested to acknowledge that the Claims that are actually pending are Claims 1-15, 31, 38, 54, 61, and 129-185.

III. Response to Restriction Requirement

In response to the Restriction Requirement mailed on December 3, 2002, Applicant elects Group I, Claims 1-15, 31, 38, 54, and 61.

New Claims 129-185 correspond to elected Group I.

In the interest of accelerating prosecution, this election is being made without traverse. Initial commercial embodiments of the invention are expected to be on the market in the United States by early 2003. While Applicant respectfully disagrees with the rationale given by the Office in support of the restriction requirement, a decision was made to place higher priority on the speedy prosecution of Claims that would cover the initial commercial embodiments.

It is Applicant's current intention to pursue the cancelled subject matter in a future continuation or divisional application. Applicant's acquiescence in the restriction requirement in the present application should not be construed as acquiescence in any restriction requirement that might be presented in a future continuation or divisional application.

IV. The 5,545,822 Patent

Strictly speaking, discussion of any prior references is premature at this point. The Office has not examined the application on its merits; and in particular, no prior art rejections have been entered.

Nevertheless, since the Office did single out one prior reference for mention in the Restriction Requirement, some brief remarks concerning that reference are presented now -- in the hope that these remarks may help to accelerate the prosecution of this application.

On page 4 of the December 3, 2002 Restriction Requirement, Paragraph 6, the Office cited the Applicant's own prior U.S. Patent 5,545,822 as disclosing a herbicide resistant rice plant.

Broadly speaking, the pending Claims in the present application pertain to rice plants that are resistant to various herbicides that normally inhibit the enzyme acetohydroxyacid synthase (AHAS). The '822 patent also broadly concerns rice plants that are resistant to herbicides that normally inhibit the AHAS enzyme. But there is a fundamental distinction between the claimed inventions and the '822 patent.

The claimed inventions involve herbicide resistance that results from a resistant AHAS enzyme. In other words, the AHAS enzyme itself is a mutant form that is directly resistant to AHAS-acting herbicides. This enzyme-level resistance has been confirmed experimentally.

By contrast, the herbicide resistance of the '822 patent is due to a currently unknown source, possibly some metabolic pathway -- but it is affirmatively known not to be the result of a resistant

AHAS enzyme. There is no enzyme-level herbicide resistance in the plants disclosed by the '822 patent.

The present specification at page 7, lines 14-21 states:

Although the resistance mechanisms of the new rice lines have not yet been fully characterized, it is believed that the herbicide resistance of the novel rice lines is most likely attributable to different mutations of the AHAS enzyme, mutations resulting in enzymes expressing direct resistance to levels of herbicide that normally inhibit the wild-type AHAS enzyme. That the resistance is due to mutant AHAS enzymes (rather than another route such as gene copy number, enhanced promoter activity, metabolic degradation, etc.) will be confirmed using in vitro assays. The procedures used to assay the activity of the acetohydroxyacid synthases will be substantially as described in B.K. Singh et al. . . .

In other words, at the time this application was filed, it was expected that the herbicide resistance of the claimed inventions was most likely due to expression of AHAS enzymes that were directly resistant to the herbicides. A specific assay was described in the specification that would be used to confirm that hypothesis. Available time and resources had not, however, allowed the confirmation of this hypothesis by the time the application was filed. The experimental confirmation has subsequently been conducted substantially as described. It has been confirmed, for example, that the herbicide resistance of line PTA-904 is in fact due to a resistant AHAS enzyme. See Paragraphs 3 through 6 and Table 1 of the enclosed Affidavit of inventor Timothy P. Croughan, describing in detail the enzyme assay experiments and the resulting data.

By contrast, the '822 patent involves a different mechanism for herbicide resistance. This mechanism is currently unknown, but it has been shown experimentally that it does not involve a resistant AHAS enzyme. The herbicide resistance characteristics of the rice plants of the '822 patent are those of the rice plant with ATCC accession number 75295. (See, e.g., the Claims of the '822 patent.) The data subsequently reported in the inventor's own U.S. Patent 5,736,629 showed that the herbicide resistance mechanism of ATCC 75295 acts independently of the AHAS enzyme, and that the mechanism provides protection even though the 75295 AHAS enzyme itself was susceptible to the herbicide, and was not overexpressed. (A copy of the '629 patent was included with the July 30, 2001 Information Disclosure Citation. Note that the '629 patent is not prior art to the present application, as it represents the inventor's own work, and was published less than one year before the

November 5, 1998" priority date to which the present application is entitled under 35 U.S.C. § 119(e).) The resistance mechanism of the '822 patent remains unknown, and perhaps involves an AHAS-independent pathway for metabolism of herbicide. See the '629 patent, Col. 6, lines 7-64.

Because the herbicide resistance of the claimed inventions is based on a functional AHAS enzyme that is directly resistant (i.e., resistant at the enzyme level) to various herbicides that normally inhibit the AHAS enzyme, and because the '822 patent does not disclose any rice lines expressing herbicide-resistant AHAS enzymes, the '822 patent is inapposite. All pending Claims are novel and nonobvious over the '822 patent.

V. Miscellaneous

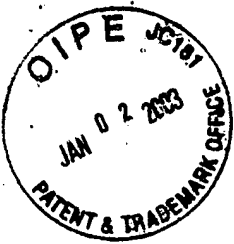
The Priority Claim

On another matter, Applicant notes that the March 15, 2002 "Office Action Summary," form PTO-326, particularly boxes 13 and 14, incorrectly refers to the priority that is claimed by this application. Domestic priority has been claimed under 35 U.S.C. § 119(e). There has not, however, been any claim for foreign priority under 35 U.S.C. § 119(a)-(d), as suggested by the March 15, 2002 Office Action Summary. The Office is respectfully requested to correct this clerical error in the next communication concerning this application. See the April 23, 2001 Preliminary Amendment, at the top of page 2, amending the Specification. See also M.P.E.P. § 1893.03(c), under the heading "Priority Claim under 35 U.S.C. 119(e), or 120 and 365(c)."

Any extension of time needed; any fees due

If any extension of time is required, please consider this paper a petition for the total extension of time required.

It is believed that no fee is due in connection with this paper. In the event that a fee is due, kindly refer to the general Deposit Account Authorization and Request for Automatic Extensions of Time previously filed with the application.



VI. Conclusion

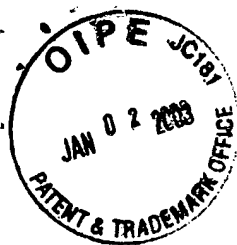
Allowance of Claims 1-15, 31, 38, 54, 61, and 129-185 at an early date is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script, reading "John H. Runnels". The signature is written in dark ink and is positioned above a horizontal line.

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Appendix B -- "Marked-Up" Version of Amended Claim 1

- 1 1. (once amended) A rice plant wherein:
- 2 (a) the growth of said plant is resistant to inhibition by one or more of the following
- 3 herbicides, at levels of herbicide that would normally inhibit the growth of a rice
- 4 plant: imazethapyr, imazapic, imazapyr, nicosulfuron, sulfometuron methyl,
- 5 imazaquin, imazamox, chlorimuron ethyl, metsulfuron methyl, rimsulfuron,
- 6 thifensulfuron methyl, tribenuron methyl, pyriithiobac sodium, or a derivative of any
- 7 of these herbicides; and
- 8 (b) said plant is a derivative of the plant [at least one of the plants selected from the
- 9 group of plants] with ATCC accession [numbers] number PTA-904 [, PTA-905,
- 10 PTA-902, PTA-903, PTA-906, PTA-907, and PTA-908] ; and
- 11 (c) said plant has the herbicide resistance characteristics of the plant [at least one of
- 12 the plants selected from the group of plants] with ATCC accession [numbers] number
- 13 PTA-904 [, PTA-905, PTA-902, PTA-903, PTA-906, PTA-907, and PTA-908] .